The Mariner Project: Generative Photomontage

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Abstract

The visual aesthetics of generative art are characterised by the wide-spread use of computer-generated imagery. The use of analogue imagery, such as photography, is relatively rare.

The *Mariner Project* helps expand the visual vocabulary of generative art by using photography as the principal visual material in combination with generative software processes to automate the production of photomontage artworks.

This research proposes that non-digital photomontage processes can be conceptually blended with generative computation in a holistic model of creative practice. This subsequent reduction in direct authorial engagement can enhance the production of novelty in surreal imagery.

The *Mariner Project.*

The *Mariner Project* is a series of art works, conceived as an exploration of Australia's colonial past, characterised by the alienation and existential terror experienced by Western European colonists on their arrival to the Australian continent.

This concept frames the horror of early European shipwrecks along the coast of Western Australia as a defining metaphor for a violent and destructive collision between European culture and Australia's landscape and Indigenous peoples[1].

> *The coast of Western Australia came to be known among Dutch sailors as the harsh and unforgiving end of the earth. It was to be avoided at all costs'* [1].

The work featured in this paper uses visual material found in remote coastal environments of Western Australia to create a menagerie of monstrous creatures. These represent the visceral manifestations of colonial dread, and the dissipation of their humanity in an alien and annihilating landscape.

The conceptual goals of the project are realised via two techniques afforded by the generative system: (a) 'Authorial Distance' and (b) 'Defamiliarization'. This paper describes the digital and non-digital aspects of the generative photomontage system developed for the *Mariner Project*.

Authorial Distance

A key aspect of this work has been the use of generative computation as a strategy for exploring novel compositions. Generative systems, by reducing the author's direct engagement in granular decision-making, offer a form of authorial distance that can be equated to surrealist automatism.
The surrealists developed these automatic writing and drawing practices as a key device for by-passing conscious rationality in the search for novel imagery [2]. In this project I use generative systems in a similar way. Minimising direct authorial engagement allows for the use of randomness to subvert rational decision making, albeit via instrumentally controlling the balance between the two poles of chance and design.

Defamiliarization

Another key aspect of the *Mariner Project* creative process is the system's ability to make relatively recognisable and familiar source material, such as plant cuttings (fig.1), unfamiliar and strange (fig. 9).

The term "defamiliarization" was first coined in 1917 by Russian formalist Viktor Shklovsky in his essay "Art as Device" (alternate translation: "Art as Technique") [3]. Defamiliarization or 'ostranenie' (Russian: остранение), is the artistic technique/process the Russian formalists named of presenting common things in an unfamiliar or strange way so that audiences could gain new perspectives and see the world differently [4].

The *Mariner Project* uses formal processes of 'defamiliarization' to express the concept of colonial dislocation and alienation.

Stage 1. Location and material

The *Mariner Project* creative process started with the selection of geographic locations, relevant to the previously described themes and during a field trip in April 2023.

These locations included the coast between Perth and Cape Range National Park, and the Pilbara region of Western Australia. The locations were explored for objects to be photographed. Selection was based on formal properties such as shape, colour, or texture etc. that I considered aesthetically novel and evocative.

Because the collection of material is strictly limited to what is available in a location, the final aesthetics of the project are unpredictable, an emergent outcome of chance encounters when navigating and exploring the environment.

Characterised this way, the photographic procedures relative to the environment represents a form of analogue generative system in two respects:

1. Restricting photography to a fixed environmental location provides formal and thematic constraints analogous with rule-based generative software.

2. The unpredictable nature of what a location will provide reflects the key role that chance (pseudo-randomness) plays in the production of novelty and variation in a generative system.

Although the analogue and digital aspects of the generative system remain palpably different, they share a common level of conceptual abstraction in terms of how I develop creative strategy and working methods.

Stage 2. Select and photograph objects.

The visual components of the project's generative visual design system are derived from objects that are found and photographed on location.

This paper uses a pair of objects, two green shoots from an unidentified plant, found in the dunes of a beach in Cape Range National Park in Western Australia as illustrative examples (fig.1).

The photographic process used in this project is informed by two central requirements of the generative image making process (A) Formal Modularity and (B) Formal Diversity.

A. Formal modularity.

The *Mariner Project* generative process requires many photographic elements to be seamlessly combined to form the image of a surreal face that retains the mimetic illusion of a real object (Fig. 8).

To achieve this, each photograph needs to share the same lighting conditions, and lens optical characteristics such as focal length, focus, light transmission (iris, aperture, and *f*-stop).

Maintaining this level of conformity is made more difficult by the necessity of photographing objects in the field. Removing natural material (objects) from Australian parks and reserves is prohibited and photography needs to be done on site. For this reason, objects were photographed using a portable flatbed scanner. This form of digital image capture produces images that have fixed lighting and lens optical characteristics and are thus suitable for seamless combination via digital imaging montage processes (fig. 1).

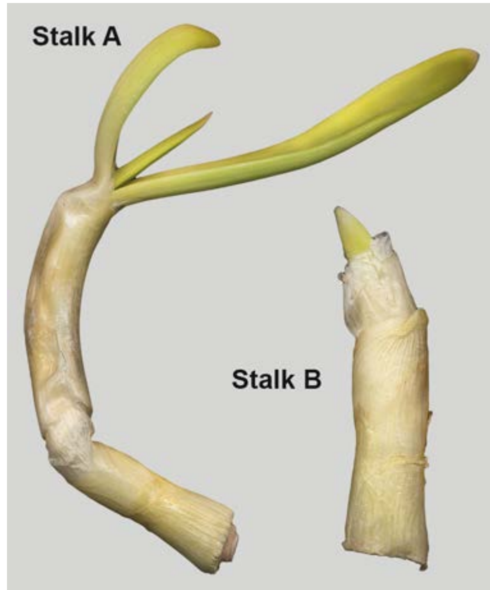

Figure.1. Two similar plant stalks.

B. Formal diversity

The project's generative system creates images by combining and arranging a relatively small and finite number of photographic images (the 'image element library') into a potentially infinite number of final compositions.

Thus, the richness, variety and diversity of final compositions is enhanced by increasing the diversity of shape elements that are available in the image element library.

To increase a range of image elements available from the same object, each is photographed at vertical, horizontal, and perpendicular angles. Each plant stalk was photographed and then rotated forty-five degrees and re-photographed until eight separate images were produced (fig.2).

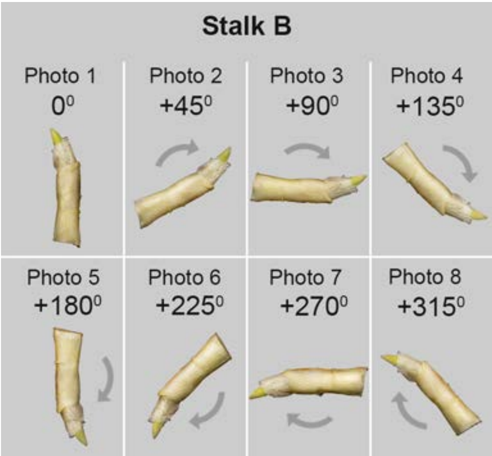

Figure 2. Stalk B photographed at eight different angles.

Because flat-bed scanners have an internal light source that is 'above' the scanning array, the images produced have a distinctive, directional lighting and so the same object, angled differently, will produce an image with different high lights and shadows. This variation adds diversity to the library of image elements.

Also, an object can be turned over and photographed from its opposite side if this provides an aesthetically pleasing result. The process of rotation is repeated, and another eight images are produced.

Stage 3. Create a diverse image library.

As outlined in the above, each discreet object is photographed at least eight times. However, because the images are of the same object at a different orientation, there is very little variation in terms of overall shape within the image set.

This next step uses image manipulation software to create a more extensive and varied library of image shapes. Adobe Photoshop 'Actions' (software macro) are used to automatically chop and distort (bend) each original image into fourteen different shapes (fig 3.).

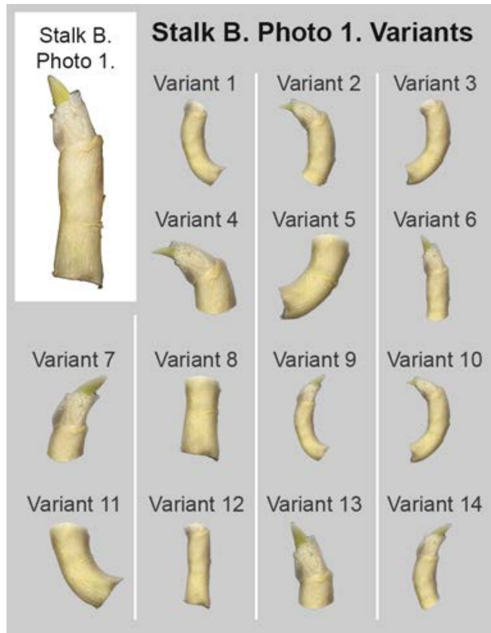

Figure 3. Stalk B chopped and distorted (bent) into a range of shapes.

These software macros are designed to be reusable and work on almost any scanned object image, accommodating variations in image size and shape. Applied as a 'Batch Process' from within Adobe Photoshop, this automatically produces a library of 120 image elements derived from the 8 initial photographs. Thus, the two objects used in this example of the project resulted in a final image library of 240 shapes (fig.4 & fig.5).

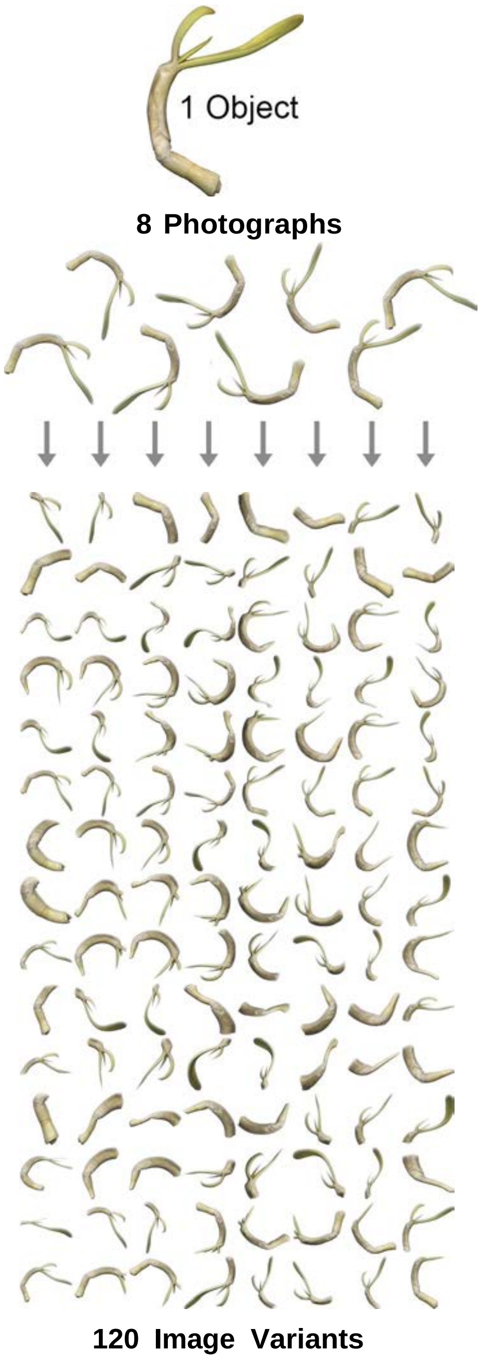

Figure 4. Stalk A photographs produce a library of 120 'modular' image elements.

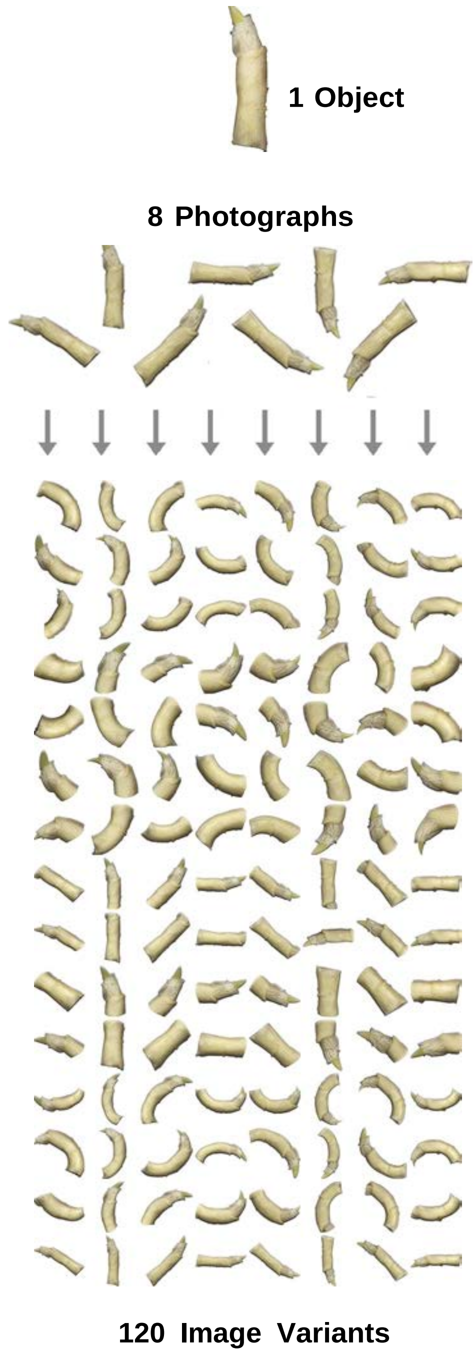

Figure 5. Stalk 8 photographs produce a library of 120 'modular' image elements.

Stage 4. Final image assembly and selection

Following the preparation of a library of 240 'modular' image elements, the next stage of production (composition) is carried out with an off-the -shelf version of Adobe After Effects, an industry standard visual effects software package. In very simple terms, this software could be described as *Photoshop* + time. *After Effects* is usually associated with the production of motion graphics and visual effects content in video sequences[2].

After Effects has 'Composition' spaces based on a timeline where video and animation footage are composed and edited in layers like those used in *Photoshop*. The *Mariner Project* uses each frame in the timeline as a discrete image space.

The first composition in the project is five thousand frames in duration. This number is not arbitrary. The generative system is a single After Effects document composed of multiple nested composition spaces and each one has the same duration of five thousand frames. The final output of the system is a sequence of five thousand images. Each one is a separate character design and a final artwork. This number of images represents the 'search space' I will explore to find the project's final range of exemplars. The number is chosen because five thousand images can be comfortably reviewed within an afternoon of work.

The library of 240 image elements (fig.4 & fig.5.) is imported into this first composition as a sequence of images, one per frame, and the sequence is looped so that the 240 images will repeat across the five thousand frames. Whereas the playback of a composition would usually move through each frame sequentially at a prescribed number of frames per second, the *Mariner Project* uses a time remapping script that moves the playback marker to random frames in the compositions at the prescribed frame rate (e.g., 30 frames per second). In this way the system chooses image elements randomly and this technique is used for numerous random selection processes throughout subsequent composition spaces in the project.

The first level of image composition occurs when the randomised image sequences (usually no more than two or three) are imported into a composition space and combined to form a range of more complex visual elements (Fig.6).

The size and position of each image sequence is a mix of (1) fixed rules and (2) semi-random variables.

1. Fixed rules.

The maintenance of fixed rules for certain operations continues throughout all levels of the work's composition. For example, the image elements may be scaled or repositioned but never rotated. All the raw imagery in the work is initially photographed (scanned) with a light source from a similar direction (top down). If the orientation of each image remains unchanged then disparate elements can be seamlessly combined while still sharing the illusion of being lit by a common light-source within the picture frame. This ensures that the artwork maintains an illusion of optical reality despite being a fictional construct composed of a vast array of different visual elements.

2. Semi-random variables.

By contrast, the scale, position, and opacity of these image elements relative to each other within the work's frame space is a semi-random function of the system. As with the selection process, randomness operates within parameters that I manipulate creatively[3].

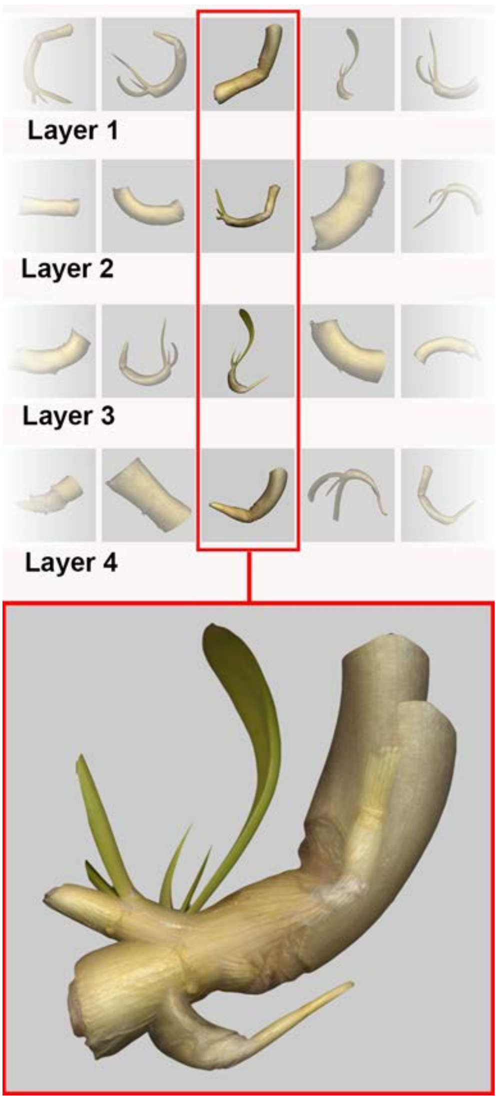

Figure 6. Primary visual elements combined to form secondary compositions.

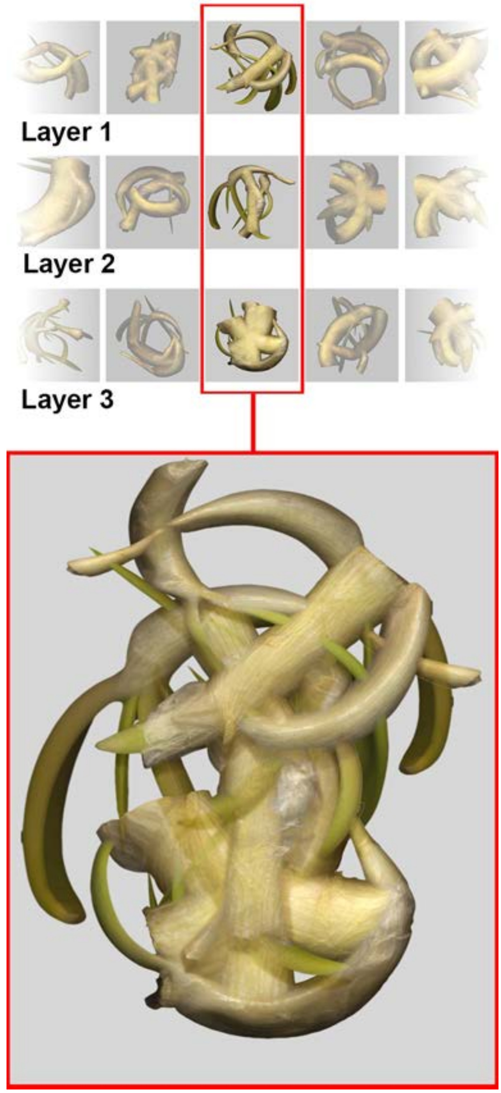

Figure 7. Secondary compositions are combined to form complex compositions.

The first level of image composition (Fig. 6) effectively produces a new library of elements from which the next level of combination randomly draws its raw elements. The same semi-random selection and organization rules of the first level are repeated to produce new configurations of imagery (Fig 7).

This process of combination proceeds through several successive levels and the imagery grows in visual complexity. Key to this model is that even small degrees of random variation across as little as three or four levels of combination can produce vast and unpredictable populations of variety and emergent form.

At a basic level of abstraction, the structure for such a system is relatively simple to articulate and model in conceptual and computational terms. Any image that is recognizable as a face is essentially defined by a set of generic rules for the relative position, size and shape of a few key facial elements. For example, a 'smiley face' is simply two points, a line and a plane put into the correct spatial relationship (e.g.: J).

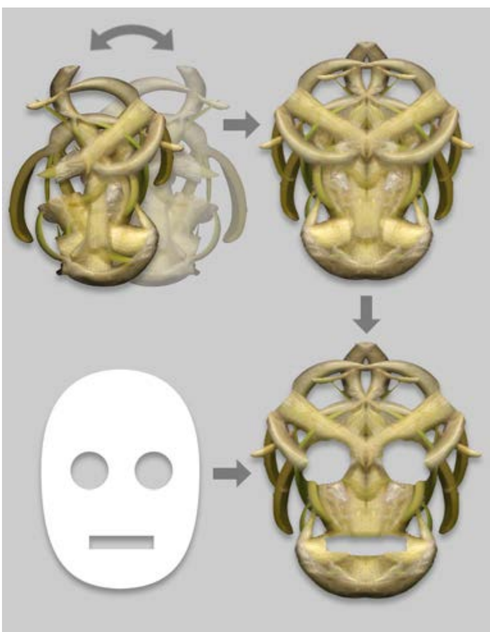

Figure 8. Complex composition with vertical symmetry & subtracted facial features.

fig.9. *final compositions* each contain up to sixty raw photographic elements***.***

Random variations of the facial element's Cartesian properties (e.g., size and position) can, if maintained within acceptable bounds, give rise to the endless diversity of new faces. Depending on the project, these photomontage compositions contain up to sixty raw photographic elements (Fig.9).

I then review the final population, evaluate the individual merits of its constituent artworks, and select a final range of exemplars for final use. The system produces a search-space population of five thousand discrete portraits. The possible number of variations is potentially infinite, but the number produced is based on the number of images I can comfortably review across a working day.

Discussion and conclusion

The above description intimates a linear and progressive construction process, but this does not capture the essential character of the process. An important factor in this method of working is that the software structure is not designed in stages but begins as a complete productive entity that produces a large population of finished compositions from its earliest inception. My part in the system's creative development is primarily via the calibration of random variables while viewing (in real-time) the results in a representative sample of the artwork population.

Via a process of review and adjustment, I work the software's 'rules' towards settings that produce an optimal richness of useful variation in the artwork population. This optimal state is generally a point where surprising and aesthetically pleasing configurations will emerge.

In this model of practice, 'chance' becomes a primary artistic medium and over the course of my research, I've learnt to manipulate it in the same way I previously learnt to use colour, form and tone etc. A key principle in this model is that the production of novelty via random variation is always mediated by the risk of losing coherence. Ernst Gombrich articulates how aesthetic pleasure is located at a point between order and disorder.

> *. . . how ever we analyse the difference between the regular and the irregular, we must ultimately be able to account for the most basic fact of aesthetic experience, the fact that delight lies somewhere between boredom and confusion* [5].

An important virtue of this process is that I am never involved in the specific construction details of any discrete artwork or animation at any stage. My creative decisions are always conceptualised and made to the population via adjustments to the generative software's various levels of abstraction and rules. Each new adjustment effectively changes every member of the artwork population and subsequently my experience of individual works approaches that of 'the innocent eye' [6] of an audience's initial experience.

By reducing my conscious agency from the intimate details of the artworks production, I significantly improve the potential for novel surrealism in the outcome. Another key aspect to achieving this is the system’s ability to create a diverse range of photographic image elements from a restricted initial source and combine them in ways that defamiliarizes their initial visual identity.

A central role of the computer in the future of creative practice has been identified as that of a 'colleague.'[7]. To this end, my research has worked towards the development of personalized generative software that can be integrated into my daily creative practice at an intimate level. My research proposes that the formal and conceptual processes that manifest a personal visual style in a photomontage art practice can be codified as discrete software functions [8]. As such they can then be usefully deployed independently of direct human authorial agency. Via my studio-based practice, I have demonstrated the practical value of generative computation as a toolset complimentary and additional to traditional practices of field photography.

[1] On 4 June 1629, the Dutch sailing ship *Batavia* was wrecked on the Houtman Abrolhos, a chain of small islands off the western coast of Australia. Over a 2-month period before rescue, the survivors were subjected to a reign of terror by a group of mutinous sailors. 120 of the ship's passengers and crew, who survived the wreck, were murdered by the mutineers before a rescue ship arrived.

[2] Key to the viability of this project is the re-conception of how this software's linear production paradigm can be used as a non-linear generative system. Importantly, Adobe software products such as Photoshop and After Effects are widely used. Whereas dedicated generative art and design software and coding practices often require prohibitive levels of expertise, graphics software suites such as Adobe's offered my photomontage art practice a creatively intuitive and accessible path to generative practices.

[3] This process of randomisation offers the first opportunity for parametric control. If the library of image elements is split in two separate folders based on, for example, fat and thin elements, then they can be imported as two discrete sequences into the first composition. If each sequence is made visible for each half of the timeline, then the random time remapping script will ensure that there is a 50% chance of either the fat or thin images being visible at any given time in playback.

The selection is semi-random in that controls can adjust the probability of certain image selections being made based on pre-defined formal distinctions. For example, if the images in the image element library have meta-data relating to colour or shape etc., then they can be imported as discrete image sequences into a composition timeline. Adjusting parameters can manipulate the odds to favour the selection based on these properties. I can also calibrate the selection process to favour a thematic distinction such as that between manufactured or organic objects.

References

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